

Applicant : Xiaobin Zhao
Serial No. : 09/920,286
Filed : August 2, 2001
Page : 3 of 10

Attorney's Docket No.: 09736-264001

Amendments to the Claims

This listing of claims replaces all prior versions and listings of claims in the application.

Listing of Claims

1. (Previously Presented) A process for the preparation of multiple cross-linked hyaluronic acid (HA), which process comprises covalently cross-linking HA via two or more different functional groups, wherein said cross-linking is effected by contacting HA with one or more chemical cross-linking agents so as to form two or more different types of functional bonds between HA molecules, and wherein said two or more different types of functional bonds are selected from the group consisting of ether, ester, sulfone, amine, imino, and amide bonds.
2. (Original) A process according to claim 1 wherein the functional groups are selected from hydroxyl, carboxyl and amino.
3. (Canceled)
4. (Previously Presented) A process according to claim 1 wherein the cross-linking agent is selected from the group consisting of formaldehyde, glutaraldehyde, divinyl sulfone, a polyanhydride, a polyaldehyde, a polyhydric alcohol, carbodiimide, epichlorohydrin, ethylene glycol diglycidylether, butanediol diglycidylether, polyglycerol polyglycidylether, polyethylene glycol diglycidylether, polypropylene glycol diglycidylether, and a bis-or poly-epoxy cross-linker.
5. (Previously Presented) A process according to claim 1 wherein an ether bond is formed using a crosslinking agent selected from the group consisting of bis epoxides and poly epoxides under alkaline conditions.
6. (Previously Presented) A process according to claim 1 wherein an ester bond is formed using a crosslinking agent selected from the group consisting of bis epoxides and poly epoxides under acidic conditions.

Applicant : Xiaobin Zhao
Serial No. : 09/920,286
Filed : August 2, 2001
Page : 4 of 10

Attorney's Docket No.: 09736-264001

7. (Previously Presented) A process according to claim 5 wherein the crosslinker is selected from the group consisting of 1,2,3,4-diepoxybutane and 1,2,7,8-diepoxyoctane.
8. (Previously Presented) A process according to claim 1 wherein an ether bond is formed using a gluteraldehyde cross-linking agent under acidic conditions.
9. (Previously Presented) A process according to claim 1 wherein the crosslinking of each type of functional group is effected sequentially.
10. (Canceled)
11. (Previously Presented) A process according to claim 9 wherein HA is first cross-linked via the hydroxyl groups by formation of ether bonds and subsequently cross-linked via the carboxyl groups by formation of ester bonds.
12. (Previously Presented) A process according to claim 1 wherein the crosslinking of each type of functional group is effected simultaneously.
13. (Previously Presented) A process according to claim 1 wherein said multiple crosslinked HA is crosslinked with one or more chemical cross-linking agents so as to form two different types of functional bonds.
14. (Previously Presented) A process according to claim 13 which comprises:
 - (a) cross-linking HA via a first functional group and
 - (b) subsequently cross-linking the product of (a) via a second functional group,wherein said first and second functional groups represent different chemical entities.
15. (Previously Presented) Multiple cross-linked HA obtainable by a process according to claim 1.
- 16-17. (Canceled)
18. (Previously Presented) Multiple cross-linked HA according to claim 15 in the form of a film.

Applicant : Xiaobin Zhao
Serial No. : 09/920,286
Filed : August 2, 2001
Page : 5 of 10

Attorney's Docket No.: 09736-264001

19. (Previously Presented) Multiple cross-linked HA according to claim 15 in the form of a gel.

20. (Previously Presented) HA according to claim 15 which is double cross linked HA.

21. (Previously Presented) A product comprising multiple cross-linked HA according to claim 15.

22-23. (Canceled)

24. (Previously Presented) A composition comprising the cross-linked HA of any one of claims 15, 18, 19, 20, or 21, wherein said composition further comprises one or more therapeutically active agents.

25. (Previously Presented) The composition of claim 24, wherein said therapeutically active agents are selected from the group consisting of anti-inflammatory agents, antibiotics, analgesics, anaesthetics, wound healing promoters, cytostatic agents, immunostimulants, immunosuppressants and antivirals.

26. (Previously Presented) The composition of claim 25, wherein said therapeutically active agent is an anaesthetic.

27-28. (Canceled)

29. (Previously Presented) The composition of claim 24, wherein said composition is in a form selected from the group consisting of membranes, beads, sponges, tubes, sheets and formed implants.

30-36. (Canceled)